June 22, 1948. R. A. BIERWIRTH 2,443,886

ART OF HANDLING BOTTLES, ETC.

Filed Dec. 18, 1945

Fig. 3

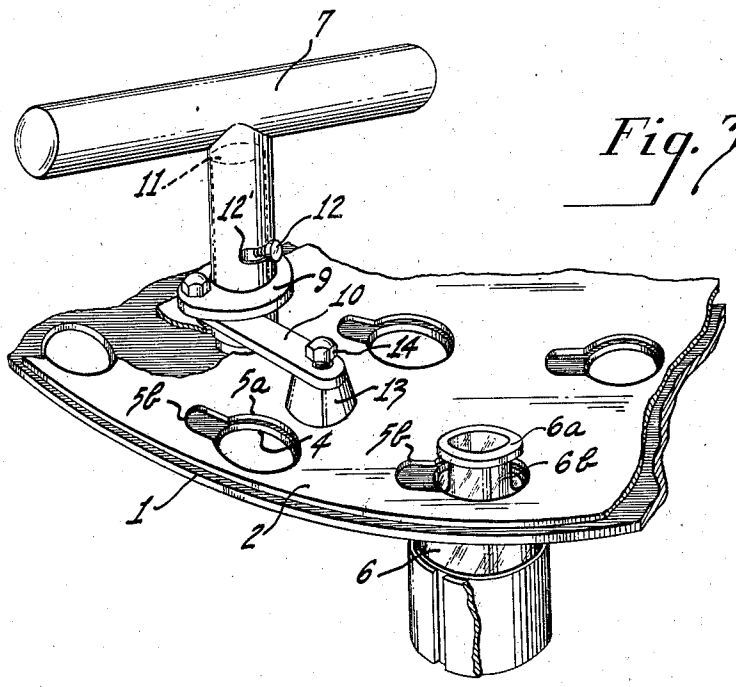


Fig. 1

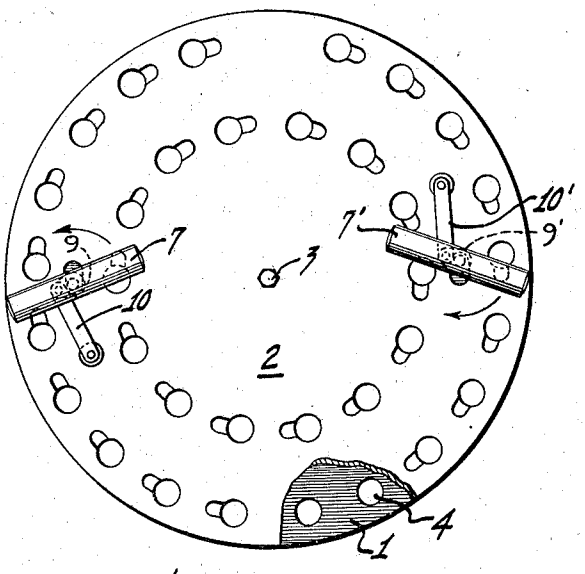
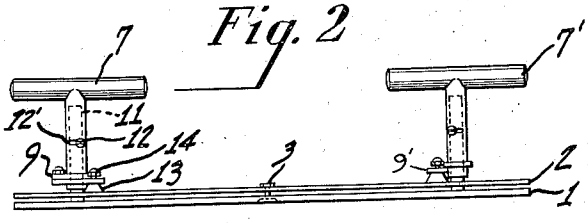


Fig. 2



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ART OF HANDLING BOTTLES, ETC.

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1 Claim. (Cl. 224—45)

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This invention relates to the art of handling bottles and other articles of similar contour.

There are many industrial processes wherein it is necessary or expedient to pick up an array of articles of duplicate construction and to transfer them in their original array to another location. Thus, in copending appln. Ser. No. 557,053 (filed October 3, 1944) of the same inventor, there is described a process of treating pharmaceutical and other liquids, and wherein the bottles or ampules are subject to concentration by radio frequency energy in one chamber and to dessication, by another form of heat, in another chamber. The first chamber contains a rotatable support and a pair of stationary electrodes for each bottle and the separate supports and pairs of electrodes are arranged in one or more circular rows or banks. In the commercial practice of the said invention it has heretofore been necessary to insert the bottles one-by-one, first in one chamber and then in the other. Obviously, this is a time consuming and troublesome operation especially so since the operator in this case is obliged to wear sterile, heat-resisting gloves. Substantially the same problem is encountered in the transfer of a group of articles from one plating bath to another.

Accordingly, the principal object of the present invention is to provide a device for picking-up an array of bottles (or articles of similar contour) and depositing them, say at another location, in their orginal array.

Another and related object of the invention is to provide an improved manually actuated article holder, and one characterized by the ease with which it is operated and by its reliable and trouble-free performance.

The invention will be described in connection with the accompanying drawing wherein: Fig. 1 is a top plan view, partly in section, and Fig. 2 is a front elevation of a holder, constructed in accordance with the principle of the invention and Fig. 3 is a fragmentary view, in perspective, illustrating the operation of the holder of Figs. 1 and 2 as applied to a bottle.

In the drawing wherein like reference characters designate the same parts in all figures, the holder of the invention is shown as comprising a lower circular plate 1 and an upper plate 2, of the same size and shape, arranged in closely spaced parallel planes and connected at their centers by a pivot or bearing 3 which permits the said plates to move with respect to each other through an arc of at least a few degrees. One of the plates, in this case the bottom plate 1,

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is provided with a multiplicity of circular apertures 4 which are arranged in two circular rows and the other or upper plate is provided with a similar number and arrangement of apertures in the form of keyholes 5. The head or circular portion 5a of each keyhole is preferably of the same diameter as that of the circular holes 4 in the other plate and, as shown in Figs. 1 and 3, can be brought into register with the said holes 4. The circular holes 4 and 5a are sufficiently large to permit the device to be passed downwardly over the terminal end, mouth or rim 6a of the bottle or other article 6 which the holder is designed to serve. The extended portion 5b of the keyhole-shape apertures 5 is of width less than that of the rim 6a but is sufficiently large to permit the neck 6b of the article 6 to be received therein when the upper plate 2 is rotated on its pivot 3 to a position whereat it is over the circular hole 4 in the lower plate 1.

The relative circular movement of the plates 1 and 2 required to "lock" the neck 6b of the article 6 within the extended portion 5b of the keyhole 5 is applied to the upper plate 2 by turning a pair of oppositely located T-shape handles 7 and 7' which are coupled to the said plate 2 by means of a crank plate 9 (9') and connecting link 10 (10'). The crank plate 9 (9') is secured to the upstanding leg of the T-shape handle 7 which is free to rotate on a post 11 secured to the lower plate 1. A pin 12 on the post 11 extends through a slot 12' in the said leg of the handle 7 and prevents it from being pulled off. The arm 10 is connected at one end to the crank plate 9 and at the other end to the upper plate 2 through a riser 13 and pivot 14. Thus, when the handles 7, 7' are rotated, about 90°, the upper disc or plate 2 is turned on its pivot 3 through the short arc required to move the narrow portion 5b of the keyholes 5 over the circular holes 4 in the lower plate 1. As previously set forth, the slots 5b are so proportioned that the necks of the bottles or other articles are thus entrapped or clamped therein, hence the said articles can be lifted-up and transported in the holder and can then be released in their original array, simply by turning the handles 7, 7' in the opposite direction.

It will be observed upon inspection of Fig. 2 that the cross arms of the T-shape handles 7 and 7' do not extend beyond the peripheries of the plates or discs 1 and 2. Hence the holder can be lowered into and operated within a chamber or well (not shown) of a diameter only slightly larger than the discs themselves.

It will now be apparent that the present inven-

tion provides an improved device for picking-up, transferring and depositing an array of bottles (or articles of similar contour) and one characterized by its ease of operation and its trouble-free performance.

What is claimed is:

A holder for bottles and other articles of the type having an upper portion and a relatively narrow lower portion, said device comprising an upper plate and a lower plate pivotally connected at their centers to permit of a limited degree of circular movement in adjacent parallel planes, said plates having a plurality of circularly arranged normally aligned apertures therein of a diameter sufficient to permit said device to be moved downwardly over said upper portion of said articles and the apertures in one of said plates having an extension of a width less than that of said upper portion of said articles and adapted to receive the said lower portion of said articles, a pair of posts secured to said lower plate at diametrically opposite sides of said center and projecting through and beyond said upper plate, a handle mounted for rotation on each of

said posts, and means including a crank connected between each of said handles and said upper plate and responsive to rotation of said handles for causing relative circular movement of said plates, whereby to apply a clamping force to said lower portion of said articles.

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